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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/712,652   | 11/12/2003  | Kang-Deog Suh        | 4591-344            | 8964             |
| 20575  | 7590        | 12/05/2005           | EXAMINER            |                  |
| MARGER JOHNSON & MCCOLLOM, P.C.<br>210 SW MORRISON STREET, SUITE 400<br>PORTLAND, OR 97204 |             |                      | NGUYEN, TAN         |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 2827                |                  |

DATE MAILED: 12/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                 |              |  |
|------------------------------|-----------------|--------------|--|
| <b>Office Action Summary</b> | Application No. | Applicant(s) |  |
|                              | 10/712,652      | SUH ET AL.   |  |
|                              | Examiner        | Art Unit     |  |
|                              | Tan T. Nguyen   | 2827         |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 November 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-11 and 13-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,3-11 and 13-16 is/are allowed.
- 6) ☒ Claim(s) 17,19,20,22 and 23 is/are rejected.
- 7) ☒ Claim(s) 18,21 and 24-26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

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1. The amendment submitted by Applicants on November 29, 2005 has been received and entered.

2. Claims 2 and 12 have been canceled.

New claims 17-26 have been added.

3. The disclosure is objected to because of the following informalities:

In claim 19, line 2, the word "ha" should be changed to --has--.

Appropriate correction is required.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 17, 19-20, 22-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Parker (U.S. Patent No. 6,538,923).

Parker disclosed in Figure 2 a typical configuration for an integrated circuit including a flash memory array [200] and circuitry enabling programming, erasing, and reading for memory cells in the array [200] (column 2, lines 56-59). Parker disclosed after each programming operation, a verification is performed to determined whether each selected memory cell is programmed at that level (column 4, lines 44-65). Figure 5 illustrates the conventional programming and verifying flows in which the program verification voltages [PV<sub>0</sub>, PV<sub>1</sub>, PV<sub>2</sub>] is different for each programming loop [Pg<sub>0</sub>, Pg<sub>1</sub>, Pg<sub>2</sub>], respectively (column 6, lines 39-59). Accordingly, the convention memory device

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inherently includes a program verification voltage generator that configured to generate different program verification voltages as shown in Figure 5.

Regarding claims 19-20 and 22-23, if the verify pulse  $[PV_1]$  (1.2 V) is considered as the claimed program verification voltage at nth loop cycle, then the verify pulse  $[PV_2]$  (0.4V) would be considered as the claimed program verification voltage at (n-1)th loop cycle, and the verify pulse  $[PV_0]$  (2.1V) would be considered as the claimed program voltage verification at (n+1)th loop cycle, which shows  $PV_0 > PV_1 > PV_2$ .

6. Claims 18, 21 and 24-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

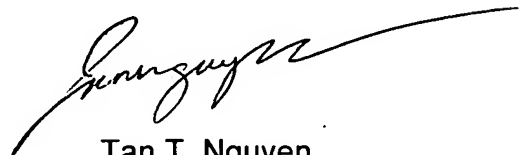
Choi et al. and Miwa et al. are cited to show memory devices having different program verification voltage values.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tan T. Nguyen whose telephone number is (571) 272-1789. The examiner can normally be reached on Monday to Friday from 07:00 AM to 03:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian, can be reached at (571) 272-1852. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tan T. Nguyen  
Primary Examiner  
Art Unit 2827  
November 29, 2005